Missouri Department of Natural Resources

Wet Weather Management Practices for CAFOs

Water Protection Program 7/2011

Concentrated Animal Feeding Operations, or CAFOs, in Missouri must meet stringent design criteria that exceed national design standards for manure storage facilities. At times, operators of these facilities are faced with precipitation events that exceed the design criteria for their operation. Persistent heavy rain coupled with cool weather during a cropping season can create many challenges for livestock and poultry operations. Even under normal weather conditions, time is often limited for land application after fall harvest or before spring planting and wet weather tends to aggravate this situation.

During wet weather, CAFOs may confront high manure storage levels for extended periods of time. This can leave both the environment and facilities at substantial risk of spills from manure storages and during land application.

Planning ahead and being prepared for these situations is paramount. The Missouri Department of Natural Resources has prepared this wet weather management guide to aid in producers' decision making and planning. With due diligence and guidance, agricultural producers can make good decisions during adverse weather patterns that protect water quality.

Good communication is also extremely important. Producers, integrators, environmental consultants and private land-application companies are all encouraged to work together, communicate and be accommodating. In addition, communication between department staff and permittees is encouraged and important. Producers should contact their local Missouri Department of Natural Resource's regional office to discuss solutions. The department is well equipped and ready to assist and guide CAFO operators to find solutions that ensure water quality is protected.

The department's CAFO general permit, found on the department's website at www.dnr.mo.gov/env/wpp/permits/issued/G010000_2011.pdf allow provisions related to wet weather events. Producers are encouraged to review their permit frequently and understand the requirements. The CAFO General Permit states:

> "A chronic weather event is a series of wet weather conditions that can delay planting, harvesting, and prevent land application and dewatering practices at wastewater storage structures. When wastewater storage structures are in danger of an overflow due to a chronic weather event, CAFO owners shall take reasonable steps to lower the liquid level in the structure through land application, or other suitable means, to prevent overflow from the storage structure. Reasonable steps may include, but are not limited to, following the department's current guidance on wet weather management practices for CAFOs".

These practices shall be designed by the department to specifically help minimize or eliminate water quality impacts from CAFOs during extreme wet weather periods. The Missouri Climate Center will determine, within a reasonable timeframe, when a chronic weather event is occurring for any given county in Missouri. The Climate Center's determination will be based upon an evaluation of the 1 in 10 year return rainfall frequency over a 10-day, 120-day and 365-day operating period.

Wet Weather Management Practices

1. Avoid allowing a lagoon or storage structure to overflow. Overflowing effluent can be highly concentrated and may cause a fish kill when it enters a stream or pond. Additionally, overflows may compromise the structural integrity of a lagoon's berms, which may result in a more catastrophic discharge.
2. Do not lower manure storages by pumping or siphoning wastewater directly onto the ground surface or into a stream. Such activity would be unlawful and subject to enforcement action regardless of the circumstance. In addition, do not attempt to increase lagoon storage levels by sandbagging or raising lagoon berms.
3. Apply effluent to frozen or saturated soils, if necessary to prevent a lagoon from overflowing. Note: Surface application of manure to frozen, snow-covered or saturated soils during times of normal weather conditions is prohibited within the department's Nutrient Management Technical Standard found on the web at www.dnr.mo.gov/env/wpp/permits/nutrient-management-tech-standard.pdf.
4. Apply effluent to vegetated areas (preferably fields used for hay or pasture) if at all possible to reduce runoff potential. If hay or pasture land is not available, apply to land with high levels of crop residue. For better access to wet fields, fill tankers to less than full capacity to reduce weight.
5. Locate and use land best suited for land application even if the land is not in your nutrient management plan. While using land not in your plan is allowed under this guide, operators must follow all relevant best management practices in your nutrient management plan and permit. Keep complete records of all applications and submit records of wet weather applications to land not in your plan as a separate list in your annual report.

6. Increase separation distance as much as possible between application areas and waterways, streams, lakes, etc. Required minimum separation distances for all land application events are:
    - 300 feet from losing streams, sinkholes, caves, wells, abandoned wells, water supply structures and impoundments or any other connection between surface and groundwater.
    - 100 feet from permanent flowing streams, intermittent flowing streams and privately owned impoundment not used as a water supply.
    - 50 feet from property lines.
    - 150 feet from dwellings or public use areas if applied with spray irrigation systems.
    - 50 feet for application by tank wagon or solid spreader from dwellings or public use areas.
7. Use land with the least slope to minimize runoff potential. Seek fields or even parts of fields with two percent slope or less. Avoid areas prone to flooding or that have shallow groundwater tables.
8. Operate irrigation equipment at a low, minimal application rate to decrease runoff potential. Ensure even distribution of applied wastewater. Surface applications less than 0.25 inches per pass and gun travel speeds of five feet per minute or more may be necessary.
9. Monitor the pumping operation continuously to minimize runoff potential or equipment malfunction. Regularly observe points of potential runoff around the perimeter of the land application area. Runoff during land application must not occur.
10. If overflow from a lagoon or runoff from land application does occur, start emergency secondary containment procedures by constructing berms or a dam to prevent wastewater from entering surface waters.
11. Report to the department all discharges of manure or process wastewater to waters of the state no later than 24 hours after becoming aware of the discharge. Record and maintain reports of the date, time, location, duration and estimated volume. To report a discharge, contact the department's nearest regional office or the 24-Hour Emergency Response Line at 573-634-2436.

    Record keeping is always recommended and is required for all permitted operations. During times of unusual weather, it is particularly important to be thorough about keeping complete precipitation, manure storage level and land application records.

Missouri Department of Natural Resources Regional Offices

Kansas City Office	816-622-7000
Northeast Office	660-385-8000
Southeast Office	573-840-9750
Southwest Office	417-891-4300
St. Louis Office	314-416-2960
DNR Emergency Response Line (24-Hours)	573-634-2436

For More Information

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Water Protection Program
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